BRA 350/ 400/ 450

Universal Radial Arm Saw

Instruction Manual

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BE CAREFUL
THIS MACHINE CAN BE DANGEROUS
IF IMPROPERLY USED

Always use guards.
Keep clear until rotation has ceased.
Always operate as instructed
and in accordance with good practice.
Read instruction manual before installing,
operating or maintaining machine.

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Manufactured by: A L Dalton Ltd
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Queens Drive Ind Est
Nottingham
NG2 1LW
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Telephone Number: 0870 850 9111
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MODEL TYPE:		YEAR:	
SERIAL NO:			
VOLTS:	HP:	PH:	HZ:

MANUFACTURERS E.C. DECLARATION OF CONFORMITY

The following machine has undergone "Conformity Assessment" and has undergone Self Assessment in accordance with:-

Schedule IV of the Supply of Machinery (Safety) Regulations 1992
and Amendment No. 2063

COMPANY

Wadkin Ultracare Limited
Franks Road
Hilltop Industrial Park
Bardon
Leicestershire
LE67 1TT

RESPONSIBLE PERSON

Mr J P Smith (Director)

MACHINE DESCRIPTION

TYPE Cross Cut Saw

MODEL BRA

DIRECTIVES COMPLIED WITH

Supply of Machinery (Safety) Regulations 1992
Amendment No. 2063 1994
Draught Proposal CEN/TC 142
ISO 9001 Part 1

SIGNED ON BEHALF OF WADKIN
ULTRACARE LTD.

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PREFACE

IMPORTANT

It is our policy and that of our suppliers to constantly review the design and capacity of our products. With this in mind we would remind our customers that while the dimensions and performance data contained herein are correct at the time of going to press, it is possible that due to the incorporation of the latest developments to enhance performance, dimensions and suppliers may vary from those illustrated.

This manual is written as a general guide. A typical machine is shown to illustrate the main features. For reason of clarity certain guards, safety devices and machine parts may not be shown on particular illustrations but MUST be fixed to the machine, correctly set and working before operating.

Failure to comply with instructions in this manual may invalidate the guarantee.

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HEALTH AND SAFETY

The CE mark on this machine signifies that an EC declaration of conformity is drawn up indicating that the machine is manufactured in accordance with the Essential Health and Safety Requirements of the 'Supply of Machinery (Safety) Regulations 1992.'

The 'requirements for supply of relevant machinery' in the General Requirement of the Regulations are not only that the machine satisfies the relevant essential health and safety requirements, but also that 'the manufacture ..... carries out the necessary research or tests on components, fittings or the complete machine to determine whether by its design or construction the machine is capable of being erected and put into service safely.'

Per sons who install this machine have duties under the 'Provision and Use of Work Equipment Regulations 1992'. An indication of these duties is given in the following extracts, but the user should be familiar with the full implications of the regulations.

REGULATION 5 requires that;

Every employer shall ensure that work equipment is so constructed or adapted as to be suitable for the purpose for which it is used or provided.

In selecting work equipment, every employer shall have regard to the working conditions and to the risks to health and safety of persons which exist in the premises or undertakings in which that work equipment is to be used and any additional risk posed by the use of that work equipment.

Every employer shall ensure that work equipment is used only for the operations for which, and under conditions for which, it is suitable.

In this regulation 'suitable' means suitable in any respect which it is reasonably foreseeable will affect health or safety of any person.

The Provision and Use of Work Equipment Regulations also include requirements as follows:

regulation 6 - maintenance

regulation 7 - specific risks

regulation 8 - information and instructions

regulation 9 - training

Note:-

Attention is drawn to those requirements of the 'Woodworking Machines Regulations 1974' which are not replaced by the Supply of Machinery (Safety) Regulations or other, e.g.; Regulation 13 of the Woodworking Machinery Regulation, - 'Training', still applies.

Whilst the prime duty for ensuring health and safety rests with employers, employees too have legal duties, particularly under sections 7 and 8 of the Health and Safety at Work Act. They include:

Taking reasonable care for their own health and safety and that of others who may be affected by what they do or don't do;

co-operating with their employer on health and safety;

not interfering with or misusing anything provided for their health, safety and welfare.

These duties on employees have been supplemented by regulation 12 of the Management of Health and Safety at Work Regulations 1992. One of the new requirements is that employees should use correctly all work items provided by their employer in accordance with their training and the instructions they receive to enable them to use the items safely.

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Noise

Noise levels can vary widely from machine to machine depending on the conditions of use. Persons exposed to high noise levels, even for a short time, may experience temporary partial hearing loss and continuous exposure to high levels can result in permanent hearing damage.

The Noise at Work Regulations 1989 place legal duties on employers to prevent damage to hearing.

There are three action levels of noise defined in regulation 2:

The first action level:-

a daily personal noise exposure (LEP'd) of 85dB(A)

The second action level:-

a daily personal noise exposure (LEP'd) of 90dB(A)

The peak action level:-

A peak sound pressure of 200 pascals (140dB re 20pa)

The exposure level is obviously influenced by the emission level of all the equipment in use.

Emissions levels for machines are provided in the particular machine instruction manual.

These levels are measured in accordance with ISO 7960 under certain specified test conditions, they do not necessarily represent the highest noise level, which is influenced by many factors, e.g. number of spindles in operation, type and condition of work piece, spindle speeds etc.

For regulations and information on relevant personal protective equipment i.e. ear defenders, employers should refer to the Personal Protective Equipment at Work Regulations 1992.

Dust

Wood dust can be harmful to health by inhalation and skin contact and concentrations of small particles in the air can form an explosive mixture.

The Control of Substances Hazardous to Health Regulations (COSHH) 1989 place legal duties on employers to ensure that:-

the exposure of his employees to substances hazardous to health is either prevented or, where this is not reasonably practicable, adequately controlled.

.... adequate control to exposure of employees to a substance hazardous to health shall be secured by measures other than the provision of personal protective equipment.

where the measures taken in accordance with the paragraph above do not prevent or provide adequate control of, exposure to substances hazardous to the health of employees, then in addition to tacking those methods, the employer shall provide those employees with such suitable personal protective equipment as will adequately control their exposure to substances hazardous to health.

Instructions for Use

Machinery manufactures are required by the Supply of Machinery Safety Regulations to provide comprehensive "Instructions for Use" of equipment, it is important that this information is transmitted to the person using the machine.

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LIFTING AND TRANSPORTATION

Transportation Dimensions and Weights.

	BRA350	BRA400	BRA450
Length	1300mm	1300mm	1300mm
Width	1300mm	1300mm	1300mm
Height	1800mm	1800mm	1800mm
Nett Weight	220kg approx	250kg approx	280kg approx

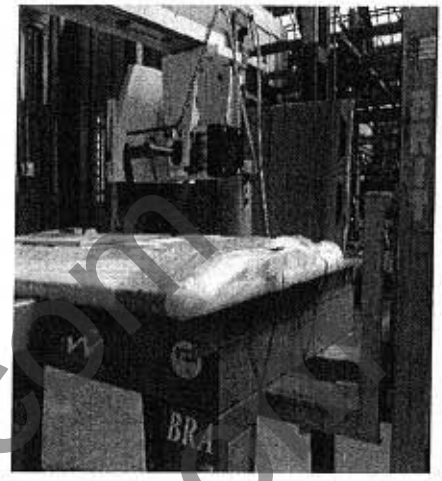
UNLOADING

Ensure that all lifting equipment used is capable of lifting the weight of the machine as a minimum.

The machine may be moved using a fork lift truck with the forks positioned under the saw table, full width.

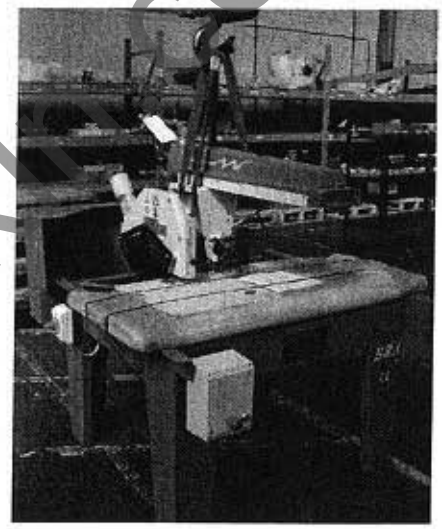
Note :- The forks must be positioned from the side of the machine (Fig.1) in order to prevent damage to the rear guard.

Fig.1



Alternatively it may be crane lifted. To lift, place a sling through the motor stirrup ensuring the motor slide lock is engaged to prevent unit movement (Fig.2 & 3). Slowly lift the machine ensuring it does not tilt and the sling is not slipping.

Fig.2



Move the machine carefully to the prepared site avoiding jolting or vibration.

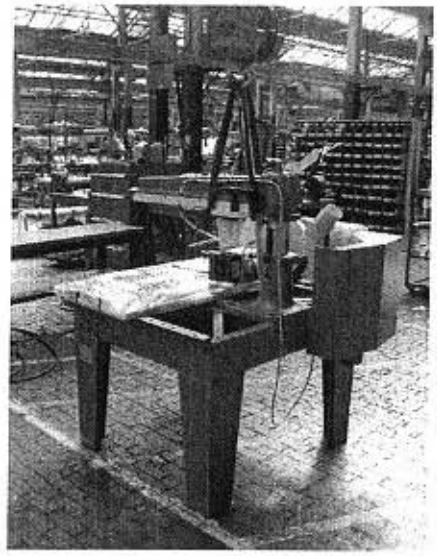
WARNING: Do not walk or stand underneath a raised machine.

UNPACKING

Remove the packaging material from all the items and check that no damage has occurred during transit.

Ascertain that the machine is complete with all fittings, requested accessories and tool kit.

Fig.3



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RADIAL ARM CROSSCUT SAW BRA 350

Maximum diameter of saw	350 mm	13 3/4 in
Maximum saw projection	108 mm	4 1/4 in
Width will crosscut with	415 x 108 mm	16 1/4 x 4 1/4 in
Standard arm at 90°	480 x 25 mm	18 3/4 x 1 in
Width will crosscut with	227 x 108 mm	8 3/4 x 4 1/4 in
Standard arm at 45°	288 x 25 mm	11 1/4 x 1 in

Height of work table	805 mm	31 x1/2 in
Diameter of saw spindle	30 mm	30 mm
Power of motor (Intermittent)	3 Kw	4 hp
Power of motor (Intermittent)(Optional)	4.5 Kw	6 hp
Speed of motor, 50 hertz	3000 rpm	
Speed of motor, 60 hertz	3600 rpm	
Maximum overall height	1790 mm	70 1/5 in
Floor space	1170 x 1600 mm	46 x 63 in
Net weight (approx.)	210 kg	462 lb
Gross weight (approx.)	316 kg	695lb
Shipping dimensions (approx.)	0.99 cu m	35 cu ft

RADIAL ARM CROSSCUT SAW BRA 400

Maximum diameter of saw	400 mm	15 3/4 in
Maximum saw projection	133 mm	5 1/8 in
Width will crosscut with	390 x 133 mm	15 1/4 x 5 1/8 in
Standard arm at 90°	450 x 25 mm	17 5/8 x 1 in
Width will crosscut with	110 x 133 mm	4 1/4 x 5 1/8 in
Standard arm at 45°	260 x 25 mm	10 1/4 x 1 in

Height of work table	805 mm	31 1/2 in
Diameter of saw spindle	30 mm	30 mm
Power of motor(Intermittent)	4.5 Kw	6 hp
Speed of motor, 50 hertz	3000 rev/min	
Speed of motor, 60 hertz	3600 rev/min	
Maximum overall height	1790 mm	70 1/2 in
Floor space	1170 x 1650 mm	46 x 63 in
Net weight (approx.)	240 kg	528 lb
Gross weight (approx.)	346 kg	761 lb
Shipping dimensions (approx.)	0.99 cu m	35 cu ft

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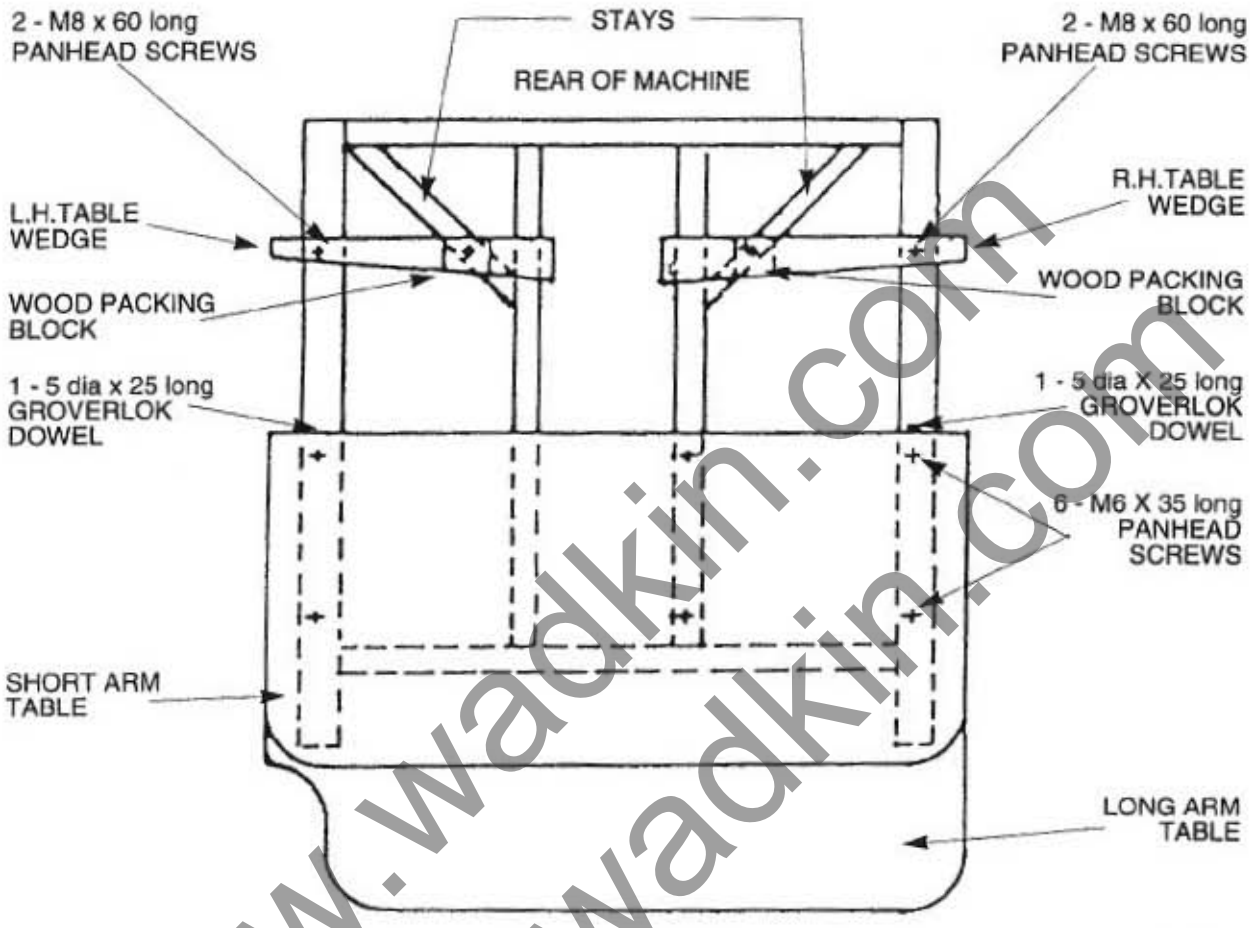
iNSTRUCTIONS FOR FITTING WOOD TABLE AND WEDGES TO BRA MACHINE


2 - M8 x 60 long PANHEAD SCREWS
STAYS
REAR OF MACHINE
2 - M8 x 60 long PANHEAD SCREWS
L.H.TABLE WEDGE
R.H.TABLE WEDGE
WOOD PACKING BLOCK
WOOD PACKING BLOCK
1 - 5 dia x 25 long GROVERLOK DOWEL
1 - 5 dia X 25 long GROVERLOK DOWEL
6 - M6 X 35 long PANHEAD SCREWS
SHORT ARM TABLE
LONG ARM TABLE

VIEW LOOKING DOWN ON BASE FIG. 1

Refer to FIG. 1

1. Place wood table against 2 off 5 dia x 25 long groverlock dowels.
2. Fasten table in position by 6 off M6 x 35 long pan head screws, (supplied complete with M6 nuts and washers).
3. Remove groverlock dowels.
4. Position fence and packing pieces behind table.
5. Place wood packing blocks over 8 dia holes on stays of base.
6. Fit left hand and right hand table wedges in position with 4 off M8 x 60 long pan head screws, (supplied complete with M8 nuts and washers). (Do not fasten tightly).
7. Fit table wedges in between packing pieces and left hand and right hand table wedges.
8. Lock up 4 off M8 x 60 long pan head screws.

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INSTALLATION

Remove protective coating from bright parts by applying a cloth soaked in paraffin, turpentine or some other solvent.

When the machine is cased for export the carriage and motor unit are removed from the arm, the arm is removed from the pillar, the pillar and foot assembly is removed from the base along with the legs. All these items are packed individually in the case. Remove and assemble as shown in Fig. 1.

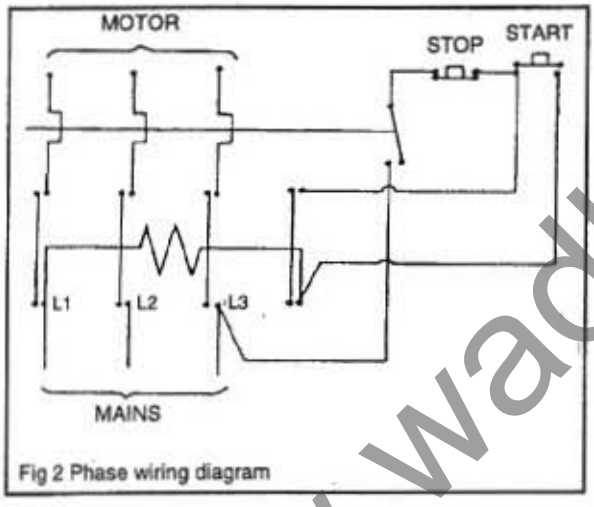

Fig 2 Phase wiring diagram

WIRING DETAILS

The motor and control gear have been wired in before despatch. All that is required is to connect the power supply to the starter.

Points to note when connecting to power supply:

1. Check the voltage, phase and frequency correspond to those on the motor plate, also the correct coils and heaters are fitted to the starter.
2. It is important that the correct cable is used to give the correct voltage to the starter, as running on low voltage will damage the motor.
3. Check the main line fuses are of the correct capacity. See list below.

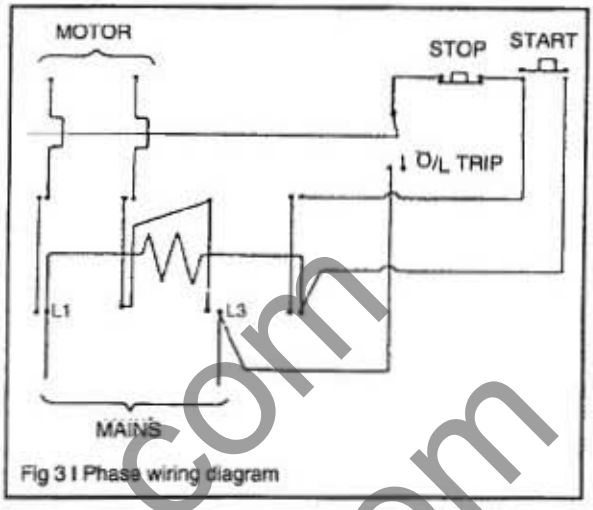

Fig 3 I Phase wiring diagram

4. Connect the line leads to the appropriate terminals. See Fig. 2 for 3 phase supply and Fig. 3 for 1 phase supply.
5. Check all connections are sound.
6. Check the rotation of the motor for correct direction. If this is incorrect for 3 phase supply reverse any two of the line lead connections.

Voltage	Phase	H.P.	S.W.G. Tinned Copper Wire	Amps
220	3	3	19	38
380/420	3	3	22	25
550	3	3 & 5	23	20
220	3	5	17	65
380/420	3	5	22	30
200/220	1	3	19	38
230/250	1	3	19	38

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LUBRICATION

It is advisable to keep all bright parts covered with a thin film of oil to prevent rusting.

The slide rods and rollers should also be kept clear of any sawdust and chippings for ease of operation.

Type of oil recommended:
POWER EM.125
Type of grease recommended:
SHELL ALVANIA 3

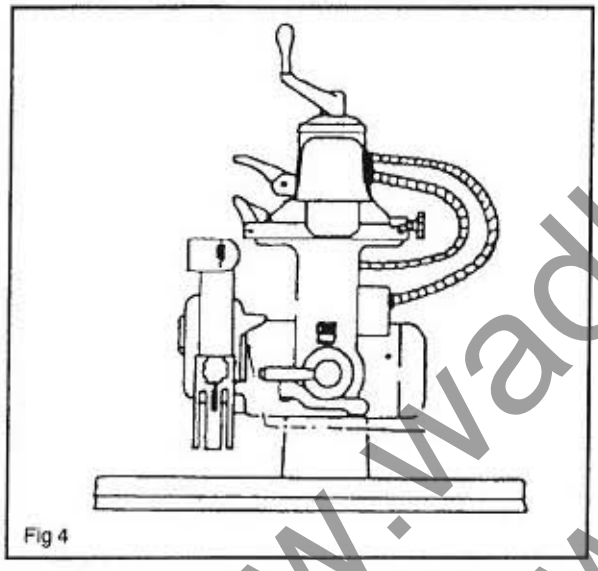

Fig 4

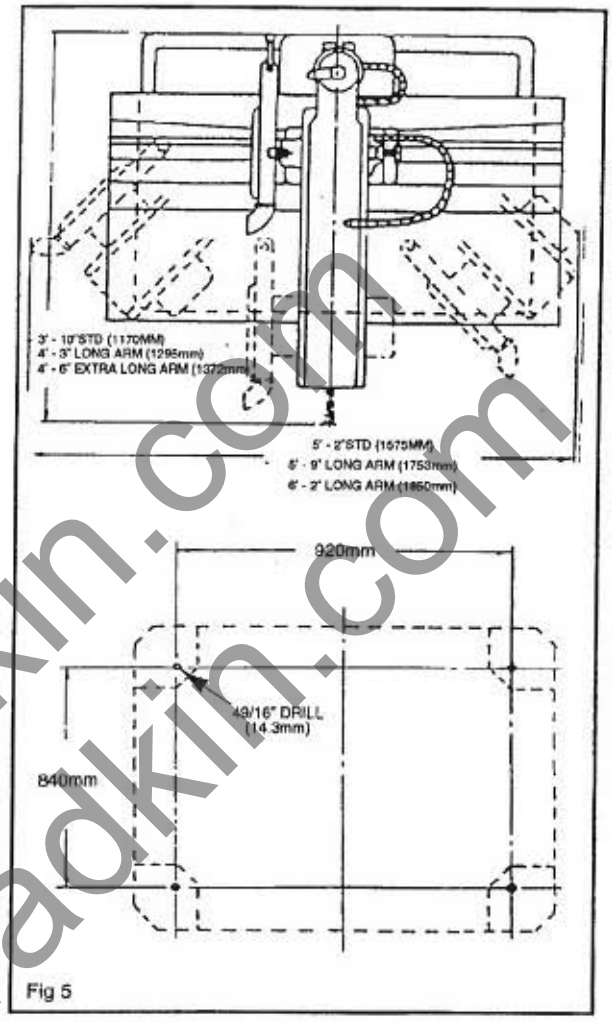

Fig 5

FOUNDATION

See Fig. 5 for bolt positions and clearance required. When installing, the machine must be levelled up by means of packing pieces under the feet. The machine table should be slightly high at the front end. This will ensure that the saw unit remains in the back position when not in use (see page 14).

This does not affect the accuracy of the machine.

Foundation bolts are not supplied with the machine except by special order.

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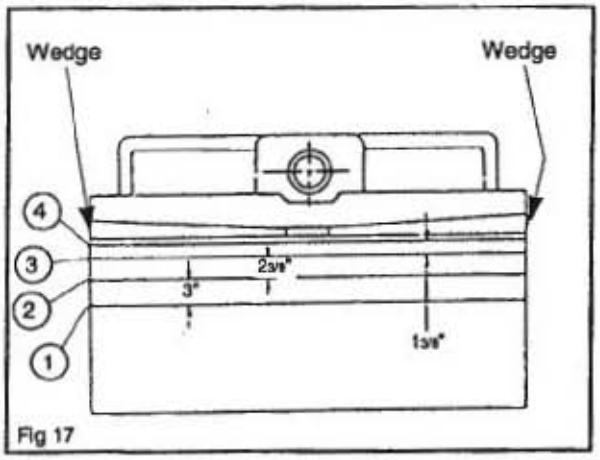

Fig 17

WOOD TABLE

The wood table is made in such a way to give four fence positions. The fence can easily be moved from one position to another by knocking out the wedges and placing the table strips to suit whichever fence position is required.

POSITION 1
This enables a maximum timber size of 14" wide x 41/2" deep (356mm x 114mm) to be crosscut with the arm at 90°.

POSITION 2
This enables a maximum timber size of 17" wide x 1" deep (432mm x 25mm) to crosscut with the arm at 90°.

POSITION 3
This is the most convenient fence position when cutting compound angles with the arm swung to the left of the operator.

FITTING SAWBLADES

1 **Isolate machine electrically**

2 **Open sawguard door(2 quarter turn screws)**

3 **Fit long arm hexagon wrench into spindle end and remove the spindle locknut(LH.thread) and remove front saw flange and sawblade.**

4 **Ensure spindle and saw flanges are clean. Fit blade to spindle and up to the rear saw flange. Check the blade teeth are pointing in the correc direction.(refer to label on door).Fit front flange and lock saw nut.**

5 **Close and fasten sawguard door. Switch on machine isolator and check blade is running correctly before commencing work.**

Note: EC.Regulations allows only TCT sawblades to be used on Crosscut machines.

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All adjustment and alignments listed below have been carefully set and checked and the whole machine thoroughly tested before despatch from the works.

Should any adjustment be necessary proceed in accordance with the relative instructions given.

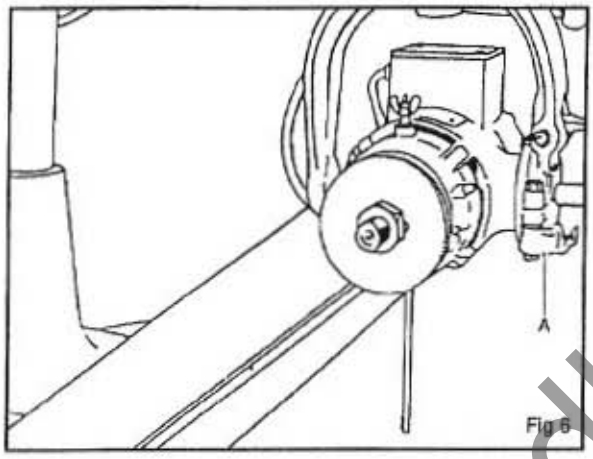

Fig 6

LEVELLING TABLE

To check the table for alignment to the arm the under mentioned procedure should be followed:

1. Remove the sawguard and blade from the motor.
2. Ensure the motor locating latch "A" in Fig. 9, the stirrup locating latch "B" and the carriage locking screw "C" in Fig. 16 is securely locked.
3. Secure a small dia. rod between saw flanges as shown in Fig. 6 then raise or lower arm until end of the rod almost touches table.
4. Lift arm locating latch "C" in Fig. 9 and swing arm to extreme ends of the table checking that clearance between rod and table remains constant.
5. Should the table need adjustment remove table packing pieces and fence, adjust table supports by loosening hexagon head bolts and moving up or down whichever is required. When set tighten all bolts.
6. Replace fence in position required and replace packing pieces and wedges.

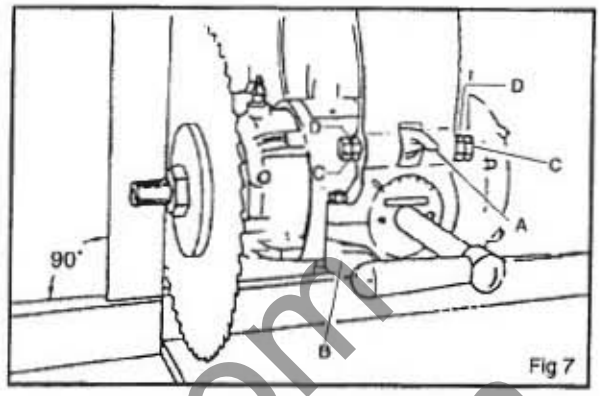

Fig 7

SAW ALIGNMENTS

1. Saw square to table

To check this alignment, place a steel square against the saw as shown in fig. 7. If adjustment is necessary, disengage the motor locating latch "A", loosen motor pivot locking handle "B" and adjust sawblade until square. Lock in this position with lever "B", then adjust aerotight hexagon nuts "C" and hexagon locknuts "D" until latch "A" locates accurately in the motor locating ring.

2. Line of travel to fence

To check this alignment place a pencil between the saw flanges, as shown in Fig. 8 and scribe a line on the table. Check this is at 90° to the fence by means of a steel square. If adjustment is necessary, loosen arm locking lever "A" in Fig. 8, and disengage the pillar locating hatch "B", adjust arm until square, lock in position; then adjust aerotight hexagon nuts "C" and hexagon locknuts "D" until the "B" locates accurately in the pillar.

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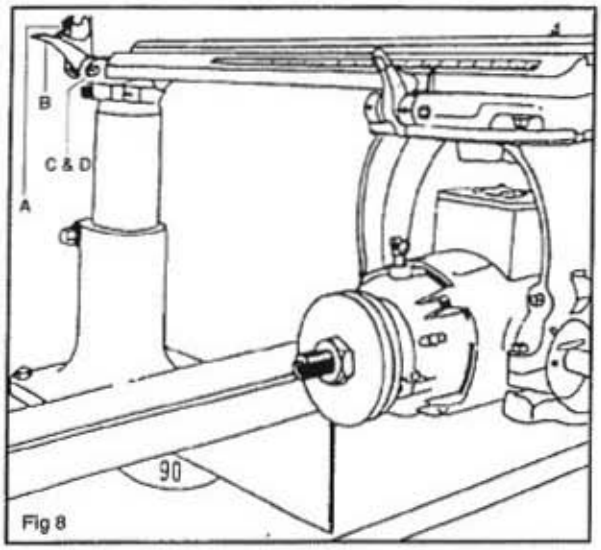

Fig 8

3. **Sawblade in relation to fence**

To check this alignment place a steel rule or some other similar straight edge between the saw flanges as shown in Fig. 9 and a steel square against the fence. Rotate the steel rule from front to rear. If adjustment is necessary loosen stirrup locking handle "D", and disengage the stirrup locating latch "B", set correctly, then relock in position with lever "D". Adjust the aerotight nuts "E" and hexagon locknuts "F" until the latch "B" locates accurately in the slot in the stirrup.

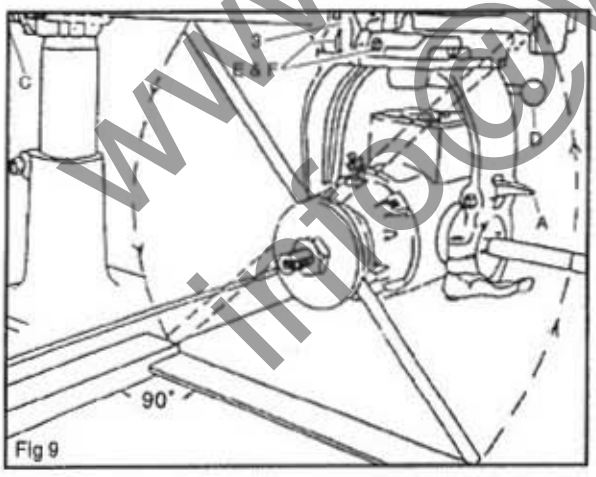

Fig 9

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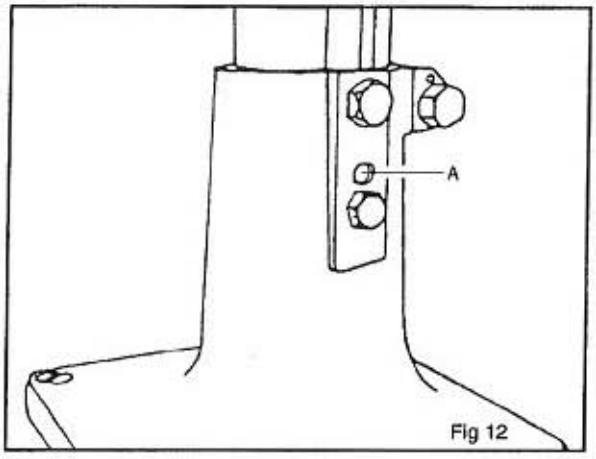

Fig 12

COLUMN ADJUSTMENTS

Movement in the arm may be traced to the pillar. To take up any play which may develop adjust the special socket head cap screw "A" in Fig. 12. After adjustment the pillar rise and fall should be checked to ensure the movement is not too tight.

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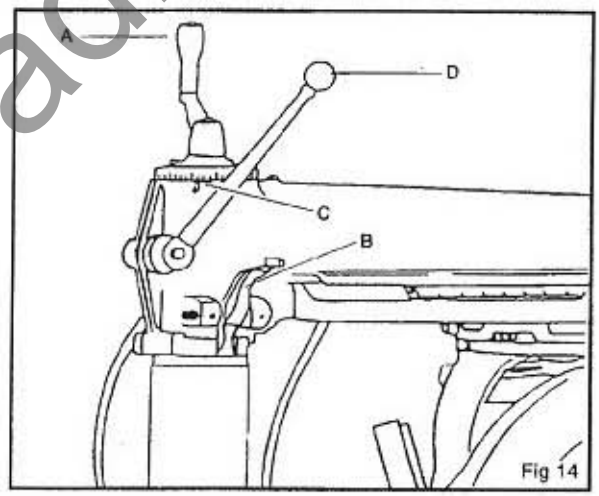

Fig 14

RISE AND FALL OF THE ARM

The arm rise and fall is by means of the handle "A" in Fig. 14. The handle turns a screw in a brass nut which is anchored to the foot. The total travel of the arm is 14" (356mm).

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IMPORTANT

WHEN ORDERING REPLACEMENT PARTS,
PLEASE QUOTE PART NUMBER AND
SERIAL NUMBER OF MACHINE.

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For Replacement parts, Tools and Accessories, Contact:

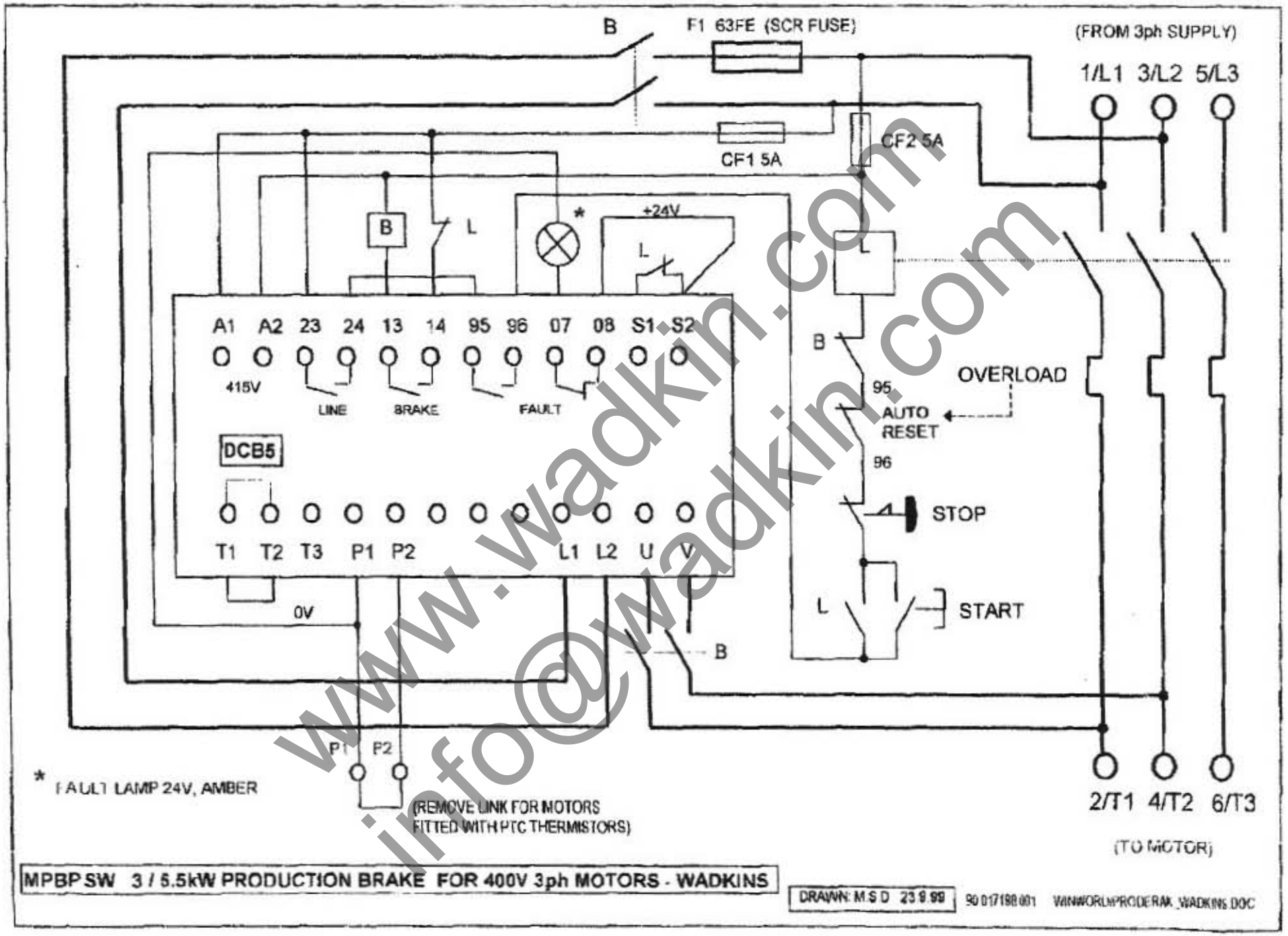
Wadkin ULTRACARE Ltd

Franks Road

Hilltop Industrial Park

Bardon

Leics. LE67 1TT



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NOISE EMISSION VALUES

Machine criteria

The machine was free standing on a concrete floor, not bolted down and not mounted on any vibration dampening.

A flexible pipe connected the machine to the dust extraction.

There was no enclosure around the machine.

Machine cutting criteria

The machine was fitted with a 400mm main saw rotating at 3000 rpm. The saw blade had 48 carbide tipped teeth and a cutting width of 3.2mm. The blade thickness was 2.2mm.

Feed rate:	4-8 M/min
Saw blade projection:	30mm

Material criteria

Material:	particle board (3 layer construction)
Moisture content:	8-14%
Board thickness:	16mm
Board length:	800-600mm processed down to final width of 150mm
Preliminary machining:	none

The figures quoted in the noise emission chart are emission levels and are not necessarily safe working levels.

Whilst there is a correlation between emission levels and exposure levels, this cannot be used reliably to determine whether or not further precautions are required to achieve safe working levels.

Factors that influence the actual level of exposure to the work force include the duration of exposure, the characteristics of the work room, sources of noise etc. i.e. the number of machines and other adjacent processes. Also the permissible exposure levels can vary from country to country.

Emission levels, however, will enable the user of the machine to make a better evaluation of the 'hazard and risk'.

Tooling criteria

The BRA crosscut saws have been designed to accept 350mm or 400mm diameter saw blades suitable to sit on a 30mm spindle. The saw should have a 'pin hole' location.

Never exceed the specified maximum speed of the saw blades.

NOISE EMISSION CHART

MODEL: BRA
TYPE: 400 50HZ 415V

DECLARED NOISE EMISSION VALUES in accordance with ISO4871

	Idling	Operating
Declared A-weighted emission sound level (LpAd) in dB re 20uPa at the operators position	78.97	88.82
Environmental correction factor (K)	= 3	

values determined according to specific test code ISO7960 Annex A

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Only tools made in conformity to pr EN847-1 shall be used on the machine.

It should also be noted that H.S.S. saw blades may be prohibited by law in certain countries and the operator should ascertain the position on this point.

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